JUN 30 1936

STATISTICAL BULLETIN
METROPOLITAN LIFE INSURANCE COMPANY

VOLUME 17 · MAY · 1936 · NUMBER 5

Fewer Occupational Fatalities Among Insured Wage-Earners in 1935

THE return of large numbers of workers to industry last year did not result, as might have been expected, in a corresponding increase in the death rate from occupational fatalities among male wage-earners insured in the Industrial Department of the Metropolitan Life Insurance Company. Past experience covering a period of 24 years shows that the occupational accident rate among these workers generally rises and falls with the employment index. Quite to the contrary, the death rate from occupational accidents declined 7.2 percent in 1935; that is, from a rate of 23.6 deaths per 100,000 policyholders in 1934 to 21.9 deaths per 100,000. Except for the extremely low figure of 21.2 per 100,000, recorded in 1933 when unemployment was at its height, the rate for 1935 was the lowest in the 24 years for which records are available. It was 39 percent lower than in 1929, the last year of relatively high business activity.

Not all types of fatal accidents, however, shared in the decline. The rate for some types rose, as will be seen from the table on page 2. Fatal falls rose 16.2 percent, and higher rates were recorded from burns and from traumatism by machines. Mine and quarry accidents and drownings also increased.

An appreciable part of the decrease in the total rate was the result of lower mortality from transportation accidents of all types. Highly encouraging is the decline of 11.1 percent in occupational automobile accidents, exclusive of collisions between automobiles and railroad trains or engines, and collisions between streetcars and automobiles. The decline last year, strangely enough, followed upon an increase of 21.6 percent in the rate for 1934 over 1933. Some of the reduction in street railroad accidents also resulted from a lowering of the incidence of automobile collisions. It is to be hoped that the recession in 1935 was due in part at least to the continuing efforts of industrial companies to promote safe driving among their employees, and to the intensive effort of municipal authorities to reduce the hazards to which pedestrians and drivers are exposed on city thoroughfares.

Automobile accidents during the years 1933 and 1934 were the leading

means of fatal occupational injury, but the decline in this type of accident last year, together with an increase in the number of fatal falls, caused these two means of injury to change places in the occupational accident scale.

The considerable drop in the rate for the category "All Other Means" is the resultant of declines in the rates for several relatively unimportant causes, or causes which are important only in years when they are chargeable with major catastrophes. Noteworthy among these were conflagration, crushing and landslide, injuries by animals, falling objects, and excessive heat.

The conclusion should not be drawn from this experience for a single year that increasing reemployment will not be accompanied by a measurable increase in our annual loss of life through occupational accidents. It is too much to expect that we can go back to the employment levels of 1929 and the years immediately preceding it, without paying for it with a larger number of deaths of workmen. Nevertheless, the decline in the death rate for 1935 in the face of greater activity in industry is highly encouraging, suggesting that when the full tide of reemployment sets in our losses may not be nearly so heavy as anticipated on the basis of past industrial experience.

DEATH RATES FROM OCCUPATIONAL ACCIDENTS

By General and Specific Means of Injury per 100,000 White Males at Ages 15 and Over. Metropolitan Life Insurance Company, Industrial Department, Weekly Premium-Paying Business, 1929–1935.

Means of Injury	Death Rates per 100,000							Percent Increase or Decline 1935 Since 1934
	1935	1934	1933	1932	1931	1930	1929	
All Occupational Accidents	21.9	23.6	21.2	22.9	27.2	31.0	35.9	— 7.2
Accidental burns (conflagration excepted)	1.0	.9	1.3	1.0	1.0	1.7	1.1	+11.1
Accidental absorption of irrespirable gases	.4	.5	.4	.4	.4	.3	.5	—20.0
Accidental drowning	1.1	1.0	.7	1.0	1.3	1.5	1.7	+10.0
Traumatism by fall	4.3	3.7	3.1	3.9	4.8	5.4	5.1	+16.2
Traumatism in mines and quarries	2.4	2.1	2.8	2.7	3.0	3.5	4.7	+14.3
Traumatism by machines	2.8	2.6	2.2	2.4	3.0	3.5	4.5	+ 7.7
Steam railroad accidents	1.9	2.0	1.8	1.6	1.9	2.6	4.9	— 5.0
Street railway accidents	.1	.4	.2	.3	.5	.4	.3	—75.0
Automobile accidents*	4.0	4.5	3.7	3.6	4.6	3.8	3.8	—11.1
Accidents by other vehicles	.5	.7	1.0	.8	.8	1.0	1.8	—28.6
Electricity (lightning excepted)	.7	.8	.5	.9	1.5	1.9	2.4	—12.5
All other means†	2.7	4.4	3.5	4.3	4.4	5.4	5.1	—38.6

*Exclusive of deaths in collisions between automobiles and railroad trains or engines, and between automobiles and streetcars.

†Includes conflagration, crushing and landslide, injuries by animals, falling objects, excessive heat, etc.

Prevalence of Smallpox in the United States and Canada During 1935

A SERIOUS setback was encountered in the fight against smallpox in the United States during 1935. The trend of the prevalence of this disease, which had been sharply downward during the last few years, was abruptly reversed, almost half again as many cases being reported last year as in 1934, that is, 8,021 as against 5,366. In view of the almost complete success attained by many other leading civilized nations in their campaigns against smallpox, this loss of ground in America last year is disturbing.

In contrast to the record of the United States, only 37 cases of smallpox were reported in 1935 by the nine Provinces constituting the registration area of Canada. This means that only three persons in every 1,000,000 inhabitants of Canada contracted smallpox during the year, whereas in the United States there were 63 cases per 1,000,000 of population. As a partial explanation of this vast difference in prevalence, it may be that smallpox registration in Canada, particularly in the western Provinces, is not as complete as it is in the United States. This surmise is based mainly upon the fact that, whereas there were 217 times as many cases reported in the United States, the actual number of deaths here was only seven times as great as in Canada. In other words, either case registration was less complete in Canada in 1935, or the type of smallpox there was much more virulent than in this country. The case fatality rates in the United States for the years 1933, 1934, and 1935 were respectively 0.55, 0.47, and 0.27 per 100; in Canada, they reached, respectively, 6.00, 15.79, and 8.11 per 100 cases. The number of reported cases in Canada was too small, however, to serve as an adequate statistical sample, and it may be that these huge margins of difference in case fatality are in part due to this circumstance. Nevertheless, considering the persistency of these large differences during recent years, it can hardly be that this factor of small numbers constitutes the full explanation. Nor is it reasonable to suppose that the type of smallpox found in Canada diverges so widely in virulence from that prevailing across the border in the United States.

Figures pertaining to entire populations, however, do not give a true picture of the smallpox situation. To do this, the geographic distribution of the disease must be presented. It is then seen that in practically all of the Eastern States and Provinces the disease is almost nonexistent, a condition sharply in contrast with that which prevails in the western half of the continent. This is shown in the map and tables on pages 4 and 5.

None of the States east of the Mississippi, except Wisconsin, experienced sickness rates in excess of

Smallpox Cases, Deaths and Case Fatality Rates for 48 States, District of Columbia, and Nine Canadian Provinces, Years 1933-1935.

Area	1935			1934			1933		
	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases
United States and Canada	8,058	25	0.31	5,385	28	0.52	6,652	42	0.63
United States (48 States and District of Columbia)	8,021	22	0.27	5,366	25	0.47	6,552	36	0.55
Canada (nine Provinces)	37	3	8.11	19	3	15.79	100	6	6.00

Smallpox Cases, Deaths and Case Fatality Rates for 731 United States Cities and 90 Canadian Cities, Years 1933-1935.

Area	1935			1934			1933		
	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases	Cases	Deaths	Deaths per 100 Cases
United States and Canadian Cities (821)	1,540	3	0.19	927	7	0.76	2,228	17	0.76
United States Cities (731)	1,530	2	0.13	923	6	0.65	2,225	15	0.67
Canadian Cities (90)	10	1	10.00	4	1	25.00	3	2	66.67

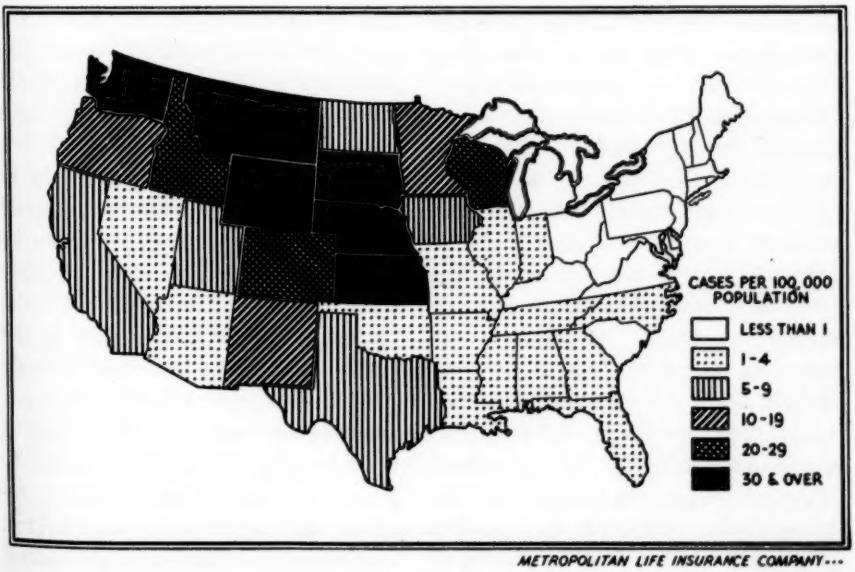
Cities in the United States Reporting High Prevalence of Smallpox in 1935.

Cities	Cases	Cases per 100,000 Population	Cities	Cases	Cases per 100,000 Population
Los Angeles, Calif	126	9	Lincoln, Nebr	131	160
Sacramento, Calif	10	10	Omaha, Nebr	72	33
San Jose, Calif	12	19	Fargo, N. Dak	9	30
Greeley, Colo	5	40	Sioux Falls, S. Dak	26	73
Elwood, Ind	6	56	Aberdeen, Wash	78	332
Fort Wayne, Ind	15	12			
Cedar Rapids, Iowa	61	103	Bremerton, Wash	47	447
Sioux City, Iowa	11	14	Seattle, Wash	73	19
Atchinson, Kans	19	145	Spokane, Wash	28	24
Lafayette, La	6	36	Tacoma, Wash	221	202
			La Crosse, Wis	39	92
St. Paul, Minn	22	8	Madison, Wis	114	180
Winona, Minn	47	220			
Beatrice, Nebr	13	124			
Grand Island, Nebr	63	328	Racine, Wis	9	13
Hastings, Nebr	30	181	Stevens Point, Wis	17	119

three cases per 100,000 of population during 1935. Seven States—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, and Rhode Island—actually had no smallpox last year. In 10 others, less than one case was reported for every 100,000 inhabitants.

West of the Mississippi and, roughly, north of the Missouri, a far different picture is presented. Here sickness rates of 65 and more per 100,000 are not uncommon. A glance at the map shows clearly that there is a distinct belt of high smallpox prevalence within this area. It starts in the extreme northwestern corner of the United States and runs obliquely southeast to a point just north of Oklahoma. It is remarkable that this belt is comprised of eight of the most sparsely populated States in the Union, a condition, one would suppose, most unfavorable to the spread of smallpox. The population density of this entire area in 1930 was only 10.6 persons per square mile. Nevertheless, these eight States—Washington, Idaho, Montana, Wyoming, Colorado, South Dakota, Nebraska, and Kansas — with a combined population of less than 8,000,000, accounted for 5,054 of the 8,021 cases reported in the entire United States in 1935. Their combined smallpox prevalence rate was 64 cases per 100,000 population. The other 40 States, with an aggregate population of nearly 120,000,000, reported 2,967 cases, equal to a case

GEOGRAPHIC DISTRIBUTION OF SMALLPOX IN THE UNITED STATES, 1935



METROPOLITAN LIFE INSURANCE COMPANY···

rate of only 2.5 per 100,000. If these eight Western States were as thickly populated as are the six New England States (131.8 persons per square mile) one can readily imagine the havoc that might ensue.

Clearly, then, the smallpox problem in the United States is centered very largely within this comparatively small area, and until it is adequately met by systematic vaccination and revaccination, there is no prospect that we shall reduce smallpox in this country to the level already attained by most of the civilized nations of the world.

Mortality from Cardiovascular-Renal Disease Among American Wage-Earners

THE cardiovascular-renal diseases, sometimes called "degenerative diseases", present two distinct aspects as a public health problem. On the one hand, there are many cases in which death from the chronic diseases of the heart, blood vessels, and kidneys is more or less the direct outcome of an earlier infection, such as acute rheumatic fever, syphilis, the communicable diseases of childhood, or typhoid fever. Of a very different nature are the deaths which result apparently quite independently of extrinsic causes, but which reflect rather the breakdown of the organism due to internal maladjustments or to the aging processes.

These two groups, differentiated on the basis of origin, point in opposite directions so far as the possibility of prevention is concerned. Certainly the first group, occurring among people in early or middle adult life, just at the time when they should be looking forward to many years of usefulness, presents rich opportunities for life conservation work to the medical profession and to those in charge of the public health. Experience has shown that it is entirely possible to establish facilities and procedures which will help first, to arrest infections, and later, to mitigate their after-effects on the vital tissues which they attack.

The picture is very different as regards the second group. Here we are concerned with processes, the causes of which are at present largely unknown. Only the future will tell to what extent senescence can be made subject to human control. At the moment, however, the available evidence does not permit us to expect very startling results in this field.

Much revealing light would be shed on the cardiovascular-renal diseases if it were possible to investigate thoroughly the mortality from "degenerative disease". Unfortunately, such analysis is not possible from the information available from either official death certificates or insurance claim papers. As a matter of fact, the mortality from the cardiovascular-renal diseases has scarcely been explored statistically. The very attitude of

fatalism which has pervaded the literature on this group of diseases has been inimical to research. Now that we realize that there is a very hopeful side to the picture, especially as it affects persons at the younger ages, it is to be hoped that more and more workers, physicians as well as analysts, will concentrate on these conditions and open the field for profitable investigation. Important contributions both to medicine and public health will result from the concentration of effort along these lines.

As a contribution to this field, the Statistical Bureau of the Metropolitan Life Insurance Company has prepared an analysis of the deaths from the principal cardiovascular-renal diseases among its millions of Industrial policyholders*. The investigation covers the 20-year period 1911 to 1930, and exhibits the trends of these various conditions and of the group as a whole, for each of the important age periods, for each sex, and the two races. The following are the outstanding facts which emerge from this survey.

1. The principal cardiovascular-renal diseases (heart disease, chronic nephritis, cerebral hemorrhage, arterial disease, and angina pectoris) accounted for more than one quarter of the deaths from all causes in this 20-year insurance experience.

2. The chronic diseases of the heart, arteries, and kidneys increased in relative importance in the period under review.

3. The death rate from the cardiovascular-renal diseases was 17.2 percent lower in the last five years of the investigation than in the first five. The decline was not continuous, however, over the 20-year period. The largest part of the decrease occurred in the years 1918 to 1921.

4. The mortality from these conditions increases with advancing age. In this experience the cardiovascular-renal diseases accounted for slightly more than 10 percent of all deaths at ages 25 to 34, and for approximately 55 percent of the deaths at 65 to 74.

5. In the aggregate, males showed a higher death rate than females. The excess male mortality was more pronounced among white persons than among the colored.

6. This group of chronic diseases showed a considerably higher death rate for colored than for white persons. The excess of the colored over the white rate obtained at every age period.

7. Heart disease, by far the most important cause of death in the cardiovascular-renal group, accounted for 45.3 percent of the deaths from these conditions. Chronic nephritis comprised 27.0 percent of the deaths, cerebral hemorrhage 21.5 percent, diseases of the arteries 4.0 percent, and angina pectoris 2.2 percent of the deaths.

8. In the 20-year period under review, *heart disease* was responsible

**The Mortality from the Principal Cardiovascular-Renal Diseases.* A Study of the Experience Among the Industrial Policyholders of the Metropolitan Life Insurance Company, 1911 to 1930. Monograph 4, in a Twenty-Year Mortality Review. 1936.

for 12.9 percent of the deaths from all causes. Under present conditions of mortality, about one out of every five white persons born will eventually die from heart disease. Heart disease is the chief cause of death at every age period after 45.

9. The trend of the heart disease death rate in the 20-year period showed three phases: a fairly stable mortality prior to the influenza pandemic of 1918, a sharply declining death rate during the pandemic years, and a rising death rate in the postinfluenza years. The death rate among white persons was at a lower level in the closing than in the initial years under survey.

10. The mortality from chronic valvular heart diseases showed a downward trend, whereas diseases of the heart muscle showed a sharp upward movement.

11. *Chronic nephritis* in the period under review ranked second in importance among the cardiovascular-renal diseases and fourth in the entire list of causes.

12. For white persons, the mortality from chronic nephritis manifested a downward trend over the 20-year period, and each age period shared in the decline. In contrast, the death rate among the colored showed an upward movement in the second decade of the period.

13. *Cerebral hemorrhage and paralysis without specified cause*, accounting for 6.1 percent of the deaths from all causes, ranked seventh in importance among the causes of death. The recorded death rate exhibited a downward trend in the period under survey.

14. The great majority of deaths allocated to *arterial disease* are certified as due to arteriosclerosis. The mortality from the latter was fairly stable in the 9-year period, 1922 to 1930, for which comparable data are available.

15. The number of deaths from arteriosclerosis gives no index of the extent to which arteriosclerotic processes are responsible for cardiovascular-renal mortality. Most deaths which are the end result of arteriosclerotic changes are allocated to heart disease, chronic nephritis, or cerebral hemorrhage.

16. The death rate from *angina pectoris* rose in the period under review, particularly since 1921. The increase was more pronounced for males than for females and for white than for colored persons.

17. For each of the principal cardiovascular-renal diseases, the trend of mortality for the general population paralleled that for Metropolitan Industrial policyholders. The level of the death rate is higher, however, for the industrial than for the general population.

18. A large number of the deaths from chronic diseases of the heart, kidneys, and arteries are initiated by infectious diseases acquired in childhood or early adult life. The prevention of childhood infections, of syphilis, of rheumatic fever, and of other infections, in the early periods of life would prevent a great many premature deaths from the cardiovascular-renal diseases.

Health Record for April 1936

DESPITE increased mortality in February, March, and April, as compared with the record for these months a year ago, 1936, up to the end of April, has been a decidedly favorable health year among the 17,000,000 Industrial policyholders of the Metropolitan Life Insurance Company. Their cumulative death rate is only slightly above that for last year (9.4 per 1,000 as against 9.3); and it must be borne in mind that 1935 set a new low record for mortality for these insured wage-earners and their dependents.

The Company's Industrial policyholders, however, are making a more favorable health record this year than is the general population of the country, in so far as can be judged by the data now at hand. For example, the cumulative death rate for 86 large American cities with a total population of 37,000,000, up to the week ending May 2d, was 7.9 percent higher than at the same time last year, whereas the rise among the insured was only 7/10 of 1 percent. Furthermore, reports received from nine States, giving the deaths for either two or three months of 1936, show that this year's mortality exceeded that of 1935 in Connecticut, Illinois, Indiana, Kansas, Maryland, Minnesota, Missouri, and New York, with South Dakota the only State, so far, to record fewer deaths than in the corresponding period of 1935.

The death rate among approximately 1,250,000 Canadian policyholders, on the other hand, is showing a decline from last year's record.

The item chiefly responsible for the slightly higher mortality this year among the insured is pneumonia, with a death rate 8.3 percent above that registered up to the end of April 1935.

On the favorable side are declines of 6.0 percent for tuberculosis, 4.9 percent for cancer, and 19.6 percent for diseases incidental to pregnancy and childbirth, together with more or less sizable decreases in the mortality from the four principal communicable diseases of childhood. The year-to-date death rate for automobile accidents dropped from 18.0 per 100,000 in 1935 to 15.9 in 1936, which is equivalent to a decline of 11.7 percent. We must not attach too much significance to this marked falling off in automobile fatalities. All of it occurred during a winter of unusual severity, marked by weather conditions which were sure to cause a large reduction in motor vehicle traffic. The automobile accident death rate for the month of April 1936 was slightly higher than that for the like month of last year.

The death rate in the large cities of the United States for the month of April was 13.0 per 1,000 estimated population. This may be compared with rates of 14.1 for March 1936, and 12.2 for April 1935. Comparison with the morbidity data for March shows that

there was increased prevalence of measles and typhoid fever, together with fewer cases of diphtheria, influenza, poliomyelitis, scarlet fever, and smallpox. Comparison with April 1935 shows more sickness in 1936 from influenza and smallpox but fewer cases of diphtheria, measles, poliomyelitis, scarlet fever, and typhoid fever.

Some of the items of special public health interest recently reported are as follows. Despite the record-breaking floods of March, no serious aftermath of typhoid fever was recorded during the month of April, when 469 cases were reported from 47 States and the District of Columbia, as compared with 442 in March.

The "3-cents-a-day" plan of the ASSOCIATED HOSPITAL SERVICE OF NEW YORK, which provides hospital care to its subscribers, has embarked upon its second year of operation. It is reported that 85,492 persons have enrolled. It has been announced that a gift of $3,000,000 from the GENERAL EDUCATION BOARD, founded by JOHN D. ROCKEFELLER, was given to the MEMORIAL HOSPITAL FOR THE TREATMENT OF CANCER AND ALLIED DISEASES. The money is to be used to build a 12-story hospital which will have extensive clinics and laboratories, together with facilities for surgery and irradiation work with X-ray and radium. The cornerstone of the LOWER WEST SIDE HEALTH CENTER OF CHELSEA PARK, New York City, was laid on May 14th. This health center was made possible through a P.W.A. allotment. In British Columbia a bill providing for compulsory Health insurance for all wage-earners, except farm workers receiving less than $1,800 annually, is to become effective on January 1, 1937. The plan is the first of its type ever attempted in Canada or the United States. A commission of one full-time chairman and four part-time members will administer the plan. The INDUSTRIAL HYGIENE LABORATORIES of the CHRYSLER CORPORATION began operation on January 1, 1936. They are devoted to the study of occupational diseases and their sources, and to conditions of work leading to industrial health hazards. One of the city ambulances of Evanston, Ill., will be equipped with ultra-short-wave transmitting and receiving apparatus, thus putting radio-communication facilities in this city to a new and very valuable use. This new equipment, enabling doctors to keep in close touch with police and hospital officials, will be part of the 2-way radio system which is also being installed on 10 of the Evanston police prowl cars. One of the advantages of this system for ambulance service is that valuable time can be saved in relaying word ahead to the hospital regarding the needs of the patient, whether the operating room should be in readiness, whether additional surgical assistance should be summoned, etc.

The following table shows the mortality among Industrial policyholders for April 1936, March 1936, and April 1935, together with the cumulative rates for the first four months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Death Rates per 100,000 for Principal Causes. Weekly Premium-Paying Business in Industrial Department. All Ages (Annual Basis).*

MONTHS OF APRIL 1936, MARCH 1936, AND APRIL 1935.

CAUSES OF DEATH	ANNUAL RATE PER 100,000 LIVES EXPOSED*				
	April 1936	March 1936	April 1935	Cumulative January-April	
				1936	1935
TOTAL—ALL CAUSES	924.7	991.0	908.4	937.2	930.8
Typhoid fever	.9	.6	1.0	.6	.5
Measles	1.8	2.0	5.3	1.5	3.3
Scarlet fever	3.9	2.9	4.3	3.1	3.6
Whooping cough	2.2	1.8	3.0	1.8	3.2
Diphtheria	1.7	1.8	1.9	2.2	2.4
Influenza	25.5	32.6	17.5	25.7	28.6
Tuberculosis (all forms)	59.7	57.2	62.7	56.3	59.9
Tuberculosis of respiratory system	52.7	51.1	56.2	49.9	54.4
Syphilis, locomotor ataxia, and general paralysis of the insane	12.3	12.5	10.4	12.4	11.4
Cancer (all forms)	90.1	91.7	94.7	91.0	95.7
Diabetes mellitus	26.8	30.4	27.0	27.8	27.8
Cerebral hemorrhage; apoplexy	64.7	72.9	67.0	68.5	67.2
Diseases of the heart†	176.8	182.7	171.2	180.5	179.3
Diseases of the coronary arteries	27.3	28.4	21.9	27.3	23.6
Angina pectoris	9.4	9.4	10.7	9.8	11.4
Pneumonia (all forms)	97.6	119.8	90.9	107.5	99.3
Diarrhea and enteritis	5.2	6.8	6.6	6.2	6.0
Appendicitis	12.0	10.0	12.1	10.2	11.4
Chronic nephritis (Bright's disease)	60.4	70.3	63.8	65.5	66.0
Puerperal state—total	7.7	7.6	8.6	7.8	9.7
Suicides	8.9	8.7	8.6	8.6	8.5
Homicides	4.7	4.5	4.9	4.5	5.6
Accidents—total	49.5	49.9	48.5	50.2	51.7
Automobile accidents	16.4	14.7	16.2	15.9	18.0
All other diseases and conditions	175.5	186.4	165.7	168.2	154.7

*The rates for 1936 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

† Excludes pericarditis, acute endocarditis, and acute myocarditis.

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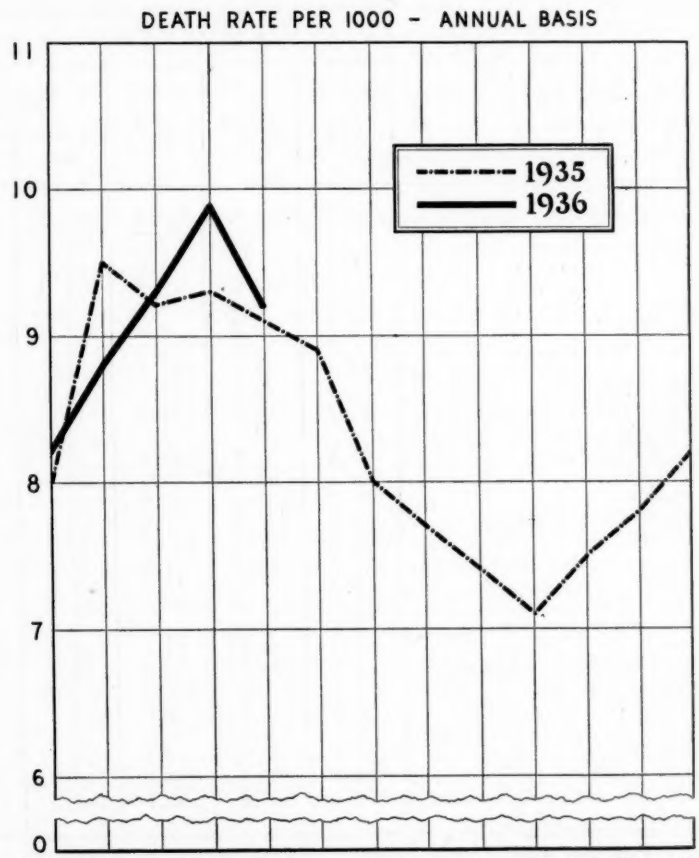
DEATH RATES FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE CO. – INDUSTRIAL DEP'T.
WEEKLY PREMIUM-PAYING BUSINESS – TOTAL PERSONS



1935	9.5	9.2	9.3	9.1	8.9	8.0	7.7	7.4	7.1	7.5	7.8	8.2
1936	8.8	9.3	9.9	9.2								

Rates are provisional

METROPOLITAN LIFE INSURANCE COMPANY PRESS
NEW YORK, U.S.A.
78513